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HELPFUL HINTS IN RANGE MANAGEMENT



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PACIFIC NORTHWEST REGION
U.S. FOREST SERVICE



January 10, 1951

To Region 6 Forest Officers:

With the help of the Pacific Northwest Forest and Range Experiment Station, we plan to send you at various times "Range Management Hints" which will assist you and your range permittees in doing a better management job on your range allotments. The following summary of observations made by members of the Range Research staff on the Starkey will be "Range Management Hint" Number 1.

Bob Harris has done a good job in recording the Station's observations. We realize that the Starkey is probably more intensely managed than the average forest range allotment, but the management principles involved are about the same for all ranges. The findings should make your job less difficult in explaining the needs of other ranges to the permittees concerned. There are several excellent examples of practices which have been questioned in the past by both permittees and forest officers that are actually benefiting the Starkey range. Many of your permittees will be interested in the results, and I'm sure there is a lot of material in the report which will form the basis for good discussion periods in your local association meetings.

We are not sending this to you as another procedure or policy statement, but the Station has been good enough to prepare it at our request, and I know that your ranges and the use of them will be improved by considering these observations made on the Starkey Range.

Fred H. Kennedy
FRED H. KENNEDY
Assistant Regional Forester

OBSERVATIONS ON THE STARKEY EXPERIMENTAL FOREST AND RANGE

by

R. W. Harris, Pacific Northwest Forest and Range Experiment Station
November 30, 1950

During the period 1947 through 1950, general observations have been made on the Starkey Experimental Forest and Range on the effectiveness of certain range management practices in securing proper distribution of cattle and utilization of forage. The manner in which these practices have been used has resulted in both good and poor range management. It is my purpose to record some of the points which appear important, for the benefit of those interested in the grazing management study. Since the observations were made on a 24,000-acre national forest allotment grazed by 775 head of cattle, the general conclusions drawn can probably be applied to many of the national forest allotments in northeastern Oregon.

Good range management on summer ranges is dependent upon many factors. Those which will be discussed here are:

1. Rate of stocking
2. Season of use
3. Distribution of cattle
 - (a) Water
 - (b) Salt
 - (c) Fences
 - (d) Range-use habits of cattle
 - (e) Riding

RATE OF STOCKING

Proper numbers of grazing animals on a range unit is a primary requirement for a good range management program. Fences may be used to control season of use, all potential water may be developed, and the salting and riding practices may have reached the highest degree of refinement; yet these factors, although equally important, are ineffective when the range must support more livestock than the forage resource will allow.

Rates of stocking have been looked upon as something static, especially when determined from intensive range inventory data. This has been true on the Starkey Cattle and Horse Allotment where a moderate rate of stocking was established in 1940 after completion of the range inventory. However, results of subsequent inventories readily show that the production of forage and its use by cattle is far from static. During the period 1940 to 1950, the utilization of bluebunch wheatgrass in the grassland openings exceeded 60 percent in 1941, 1942, 1944 and 1949. It was utilized approximately 50 percent in 1947 and 1948, and was 10 percent or less in 1942 and 1945. No records were obtained in 1943 and 1946.

The utilization of this species has varied from a low of 40 percent to a high of 69 percent in successive years. In the forested types, the utilization of Idaho fescue has varied from a low of 28 percent in 1945 to a high of 47 percent in 1949, while elk sedge was used 29 and 50 percent, respectively, in the same years. These fluctuations in utilization in most cases can be attributed to the amount of forage produced, which in turn is dependent upon precipitation.

These data emphasize the fact that the forage resource is far from static and that rates of stocking need to be flexible in order to protect the range in poor years and to take full advantage of the forage in good years.

However, at the present time, adequate information is not available which will allow prediction of the annual forage crop with sufficient accuracy for practical application. There is also an unsolved problem of integrating fluctuations in stocking on the summer range with the over-all ranch enterprise. Until practical solutions to these problems are presented, conservative rates of stocking should be established which will leave considerable forage unutilized in the good years but may result in use heavier than desirable during some very poor years.

SEASON OF USE

Until 1940 the permitted grazing season on the Starkey allotment varied from 5 months (May 15 to October 15) to yearlong. The majority of the cattle grazed from April 15 to October 31, a $6\frac{1}{2}$ -month period. In 1940 an 11 percent reduction in stocking was accomplished by reducing the grazing season to 4 months, June 16 to October 15. This fixed grazing season was kept in force from 1940 to 1949. The opening date of June 16 was based on average conditions of soil and vegetation readiness.

Since 1947 it has been observed that the date of soil and vegetation readiness may vary as much as 30 days between successive years. In 1947 the soil was firm and the vegetation ready for grazing by June 1, while in 1948 low temperatures and late snow in May, followed by heavy rains in June, delayed the drying of the soil and development of vegetation so much that the range was not ready for grazing on June 16. An early spring in 1949, with deficient rainfall in May, produced range conditions which would have allowed grazing as early as May 15.

As a result of these observations, the opening date of grazing in 1950 was set in accordance with soil and vegetation conditions on the range without regard to fixed calendar dates. The range was actually ready for grazing by June 4, 1950, but because fence and water development maintenance had not been completed, the opening date was delayed until June 9. Under this system the closing date varies directly with the opening date, and the length of the grazing season remains fixed at 4 months.

The proposal of varying the opening date of the grazing season from year to year was submitted to the permittees of the Starkey Cattle and Horse Association for approval. Some of these operators have a 5-day trail with their cattle to the summer range and they agreed to the proposal with the provision that a minimum of 10 days notice be given prior to the opening date of the grazing season.

The practice of regulating grazing on summer range with regard to seasonal rather than calendar dates has several advantages. Most important among these are: (1) the cattle obtain considerable use of Sandberg bluegrass and other early forage when we have a year with an early spring, such as 1949; (2) trampling damage to soft soils can be avoided in years with a late spring, such as 1948; and (3) the grazing season on summer ranges can be correlated more closely with the forage conditions on the spring ranges.

DISTRIBUTION OF CATTLE

On most summer ranges in the Blue Mountains, poor cattle distribution is the principal problem to be overcome. Proper rate of stocking and season of use are essential to good range management, but range abuse can and will continue unless further steps are taken to apply good management on the ground.

The distribution problem on most summer ranges is caused by the natural tendency for cattle to seek out the choice grassland and meadow areas which are attractive because of an abundance of forage, water, and favorable topography. Consequently, areas which have a less favorable combination of forage, water and topography are less attractive to cattle and receive little or no use.

On the Starkey, and probably on other ranges as well, these latter areas present a real challenge to the range administrator to improve distribution by making the less desirable areas more attractive to cattle. This problem has been attacked through the use of water developments, salting practices, fencing, riding, studying the range-use habits of the cattle, and by making a careful analysis of the benefits and limitations of these practices at the end of each grazing season. This analysis provides valuable information for the revision of the management plan for the following grazing season.

Water. Water is probably the most effective means of controlling distribution of cattle on Blue Mountain summer ranges. Water can be developed at a lower cost than construction of fences and is much more effective in holding cattle in an area than salt. On most summer ranges, the development of additional water provides the most effective means of improving cattle distribution. At Starkey, we have found that the development of water should precede any fencing program, since the location of water frequently determines the location of a fence. Water, however, also promotes the concentration of cattle and, where watering places are widely separated, it becomes a factor which promotes poor distribution unless other management practices are applied. All potential water should be developed since many watering places for a few head of cattle provide better distribution than a few watering places for a large number of cattle.

The development of small springs affords an opportunity to achieve maximum use of forage. Springs having a flow of less than 100 gallons every 24 hours have been successfully developed at Starkey and have materially improved distribution of use. For example, in 1949, five small springs were developed in a drainage containing approximately 3500 acres. Only one of these springs produced enough water before development to provide any stock water. Only two springs, with a combined capacity of watering approximately 75 head of cattle, had been developed in this drainage prior to 1949.

In the fall of 1949, when water was critically short everywhere, over 300 head of cattle were gathered from this drainage at the close of the grazing season. The development of the springs in this drainage not only permitted use of the forage late in the season, but materially improved the distribution of use over the entire range unit by drawing the cattle into areas only lightly used in the past. Poor distribution elsewhere on the Starkey range could be improved by the development of 13 additional small springs.

Salt. An adequate number and proper location of salt grounds provides an economical method of controlling distribution of cattle on summer ranges. Cattle can be attracted to areas which are remote due to distance from water or topography by the proper use of salt. The absence of salt, however, will not keep cattle away from areas which are attractive because of the nature of the feed or the topography.

On the Starkey, 35 salt grounds are used to cover a 24,000-acre range, or approximately one salt ground for every 640 acres. All salting is done away from water and, in general, the salt is placed in remote forested types where it is desired to attract cattle. In the past, salting has been at permanently located salt logs where concentration of salt, livestock, and game have developed sore spots. To counteract this situation, temporary salt grounds have been established which can be easily moved every year. This new plan of salting consists of placing the salt block on a 10- or 12-inch spike which is driven into a sound stump. The salt remains in place on the stump until only a small fraction of the block remains. With this system there is a minimum of waste of salt and the salt ground can be changed annually with very little effort. The salting plan used consists of placing salt first in areas where it is desired to attract the cattle and progressively moving salt to other areas as the season advances, as well as removing salt from areas where the forage has been properly utilized.

Fences. The benefits of boundary, drift, and division fences in promoting proper distribution of cattle are widely known and need no further explanation. However, experiences with fencing program at Starkey have brought out some of the limitations and adverse effects of fences as they influence distribution of use.

To promote proper distribution, fences should follow topographic features wherever possible. Cross-drainage fencing interferes with natural movements of cattle and usually causes concentration of use on one side and little or no use on the other. This can be illustrated by the effects of a division fence constructed at Starkey in 1942. The fence was constructed on land lines without regard to topography along a generally south-facing slope of a major drainage containing live water. Prior to fencing, cattle watered in the drainage, grazed the south-facing slope to the ridge, then grazed down the north-facing slope into another drainage for water, a distance of approximately 2 miles. After fencing, the cattle could graze only a short distance up the slope when they hit the fence and consequently returned to water. The area between the fence and the ridge is remote from water and almost no grazing use is obtained. This fence has caused a distribution problem which might have been avoided if the topography and range-use habits of the cattle had been considered prior to the location of the fence.

Range-Use Habits of Cattle. Behavior of cattle on summer ranges may be compared to the adage, "You can lead a horse to water, but you can't make him drink." Cattle, especially mature cows, have habits of grazing some range areas or types only during a specific period of the grazing season. These developed habits are frequently a cause of improper distribution of use and, unless recognized, can offset any gains to be obtained from improved management practices. When cattle are moved from one allotment to an adjacent allotment, or from one part of an allotment to another, without the aid of division fences, they frequently return to their old range because of strong habits to use certain areas. In one instance at Starkey we found that cattle, which were under fence in a new area late in the season, concentrated in a fence corner nearest their old range, yet farthest from the water in the new range.

The cattle on the Starkey allotment are owned by six permittees which results in considerable variation among herds, depending upon breeding and method of wintering. We have found that the cattle which are range-fed yearlong, except for periods of winter storms, are better rustlers on summer range than cattle which are kept in the feed lot most of the winter. Consequently, in distributing cattle over the range it might be more efficient to put the better rustlers in the rougher country and the more domesticated cattle in the more accessible areas where they will end up eventually, regardless of where they are distributed. Many of our distribution problems at Starkey can be attributed to failure to recognize the habits of cattle when preparing the annual management plan. In 1950, an attempt was made to secure proper use of a 3500-acre range unit in 40 days. The failure to recognize factors related to the habits of cattle was the primary cause of poor distribution of use over this range unit. Approximately one-half of this area consists of gentle slopes and relatively broad ridges which are either open or have scattered trees. The other half consists of steeper slopes, narrow ridges and a heavier forest cover. The cattle preferred to graze the gentle slopes and broad ridges and, even though they were repeatedly distributed in the other area, they returned almost immediately to the range with gentle slopes. It was almost the end of the 40-day grazing period before the cattle began to use the range on the steeper slopes. Another factor which led to poor distribution of use on this unit was that one herd of 100 head of cattle, which had effectively used the steeper slopes in the past, were placed in a different range unit during this grazing season. Had these habits of cattle been recognized when the plan of management for the 1950 season was being prepared, steps could have been taken to use cattle in this unit which were acquainted with the country. The problem might also have been avoided if the area had been grazed for a longer period of time, but with fewer numbers. This would have allowed the cattle to use the various range types according to natural habits.

Experiences in studying the range-use habits of cattle at Starkey can be summarized by quoting the recent statement of a rancher, "The successful stockman doesn't argue with his animals, he takes advantage of their natural traits to accomplish what he wants to do. All of which require patience and understanding".^{1/}

^{1/} A. P. Atkins. Conservation Ranching in the Oklahoma Panhandle. Jour. Range Management 3(3):167-171. July 1950.

Riding. The success or failure of a management plan is almost entirely dependent upon the man on the ground who directs the operation, the range rider. He is usually thought of as the man who looks after the cattle, but an equally important part of his job is to look after the resource, the soil and the grass. Range condition standards, criteria for determining upward and downward trends, and elaborate management plans will do very little toward improving the range unless the range rider is a grass manager as well as a cattle manager.

The range rider who knows the country and the way the cattle naturally tend to use it has a wealth of background information which is essential for planning management of an allotment. He is the man who knows if there is enough feed in an area to warrant the development of a small spring, or if salt in the same area would be just as effective for promoting better distribution. From his knowledge of the manner in which cattle work a country, he can usually prescribe the location of a fence which will promote better distribution and less concentration.

The plan of riding on any range allotment should be correlated with forage conditions and the manner in which the cattle use the various range types during the grazing season. If the cattle used the same type during the same period each year, a fixed plan of riding could be used over a period of years. Observations at Starkey show that cattle, given a free choice of forage types, will graze the forested types throughout the entire grazing season in some years. In other years they graze the forested types only until mid-season, or not until after mid-season. The reasons for this seasonal preference of forested range forage between years are not known, but some of the common explanations are: (1) that in a dry year the forage on forested range is "sweet" while that on the grassland openings is "sour"; (2) that cattle are forced in the forest because of insufficient forage in the openings; (3) that in a wet year there is sufficient forage on the grasslands to meet the needs of the cattle and the forested range is used only to seek relief from heat and flies; (4) and that forested range is used only before, or only after the forage has been subjected to frost. The objective of riding should be to secure uniform distribution of use over all range types regardless of the way in which the cattle might graze the various types in any year. Weather and forage conditions must be considered in preparing the riding plan in order to take full advantage of the natural traits of cattle in securing proper distribution.

The effectiveness of riding to secure proper distribution is limited by the size of the area, the topography, and the types of forage available. Experiences at Starkey indicate that the maximum size of range unit which one man can cover effectively is approximately 15,000 acres. Probably the greatest benefit brought about by a deferred system of grazing on large allotments is the reduction of the area which a rider has to cover at any one time. We have found at Starkey that proper distribution of cattle can be obtained by riding, but the riding and management plan must be revised annually to fit the forage conditions on the allotment each year.

THE RANGE RESEEDING PROGRAM IN REGION SIX

1. 300,000 acres of national forest range lands in Oregon and Washington a need of reseeding.
2. These grazing lands were severely used and valuable grass and plant cover largely destroyed during the days of early settlement of this region when grazing was unrestricted. This continued until just after World War I.
3. Much of our wild range land is producing only a fraction of the forage that it is capable of if it were reseeded and properly used. Actual experience with reseeded areas in this region prove that they produce up to ten times more forage following reseeding.
4. Lands suitable for summer grazing in Oregon and Washington will pasture only half the livestock that the spring and fall range will support. This situation emphasizes the need to put summer range lands into full productivity.
5. Thirty-five percent of the national forest lands in the Pacific Northwest Region are grazed by domestic livestock. All of the lands are used by w game. 70 percent of all big game animals in the region feed on national forest lands during all or part of each year.
6. Every additional pound of meat produced on forest ranges adds that much more wealth to the nation. Range land in good condition produces up to ten times more wealth than the same land in poor condition.
7. Range land in poor forage condition deteriorates through erosion of the fertile top soil. Top soil which took thousands of years to produce can be lost by the misuse of the land by one man.
8. The necessity of clear, pure water to support our population is well recognized. Only grazing land in good condition is serving its full purpose as important watershed.
9. The national forest range lands have served the nation well through two periods of war time demand for meat, wool and leather, but they have suffered severely. Ranges should be rebuilt to produce their maximum for national emergencies.
10. Successful reseeding of over 20,000 acres has been accomplished by the Forest Service in this Region since 1945 at a cost of \$10 per acre. The cost of completing the reseeding job on the 300,000 acres badly needing this treatment is \$3,000,000. That would be \$600,000 each year for five years.
11. Today's stockmen are not primarily responsible for the poor condition of national forest ranges. Most of the real damage occurred before their time. They should not be required to pay the whole rehabilitation costs. It is the responsibility of the nation. Congress will have to furnish at least a part of the money if the job is to get started before it is too late.



Grass is the forgiveness of nature--her constant benediction. Fields trampled with battle, saturated with blood, torn with the ruts of cannon, grow green again with grass and carnage is forgotten. Streets abandoned by traffic become grass-grown like rural lanes and are obliterated. Forests decay, and flowers vanish, but grass is immortal. Beleaguered by the sullen hosts of winter, it withdraws into the impregnable fortress of its subterranean vitality and emerges upon the first solicitation of spring. Sown by the winds, by the wandering birds, propagated by the subtle agriculture of the elements, which are its ministers and servants, it softens the rude outline of the world. Its tenacious fibres hold the earth in place and prevent its soluble components from washing into the wasting sea. It invades the solitude of the deserts, climbs the inaccessible slopes and forbidden pinnacles of the mountains, modifies climate and determines the history, character, and destiny of nations. Unobtrusive and patient, it has immortal vigor and aggression. Banished from the thoroughfare and the field, it bides its time to return, and when vigilance is relaxed, or the dynasty has perished, it silently resumes the throne from which it has been expelled but which it never abdicates. It bears no blazonry of bloom to charm the senses with fragrance or splendor, but its homely hue is more enchanting than the lily or the rose. It yields no fruit in earth or air, and yet, should its harvest fail for a single year, famine would depopulate the world.

-- John J. Ingalls

Annually the grass, browse, and forbs on the national forests of the Pacific Northwest are converted by grazing animals into 18,000,000 pounds of beef, 6,000,000 pounds of mutton, 4,000,000 pounds of venison, and 4,000,000 pounds of elk meat. At present-day prices, this 32,000,000 pounds of meat is worth \$10,000,000.